Bonding Atoms

A molecule or compound is formed when two or more atoms bond together. A **chemical bond** is the **force that holds atoms together**. Each **atom** has a **specific number of bonds** that can be made. Noble gas atoms are the only elements that never want to form bonds.

A **covalent bond** is formed between **two non-metal atoms that share a pair of electrons**. A covalent bond between two or more atoms forms a **molecule** or molecular compound. Some common molecules are water H2O, glucose C6H12O6 and nitrogen gas N2.

Later we will study how atoms gain or lose electrons to form ions. **Ions are atoms with an electric charge**. Oppositely charged ions are attracted to each other and form ionic bonds. An **ionic bond** is formed by an **electrical attraction** between **a metal ion and a non-metal ion**. An ionic bond between two ions forms a **compound** or ionic compound. Some common compounds are salt NaCl, iron oxide Fe2O3 or copper oxide Cu2O.

**Bonding capacity** or combining capacity is the ability of an atom of an element to chemically combine with other atoms. The periodic table can be used to determine the bond capacity of an element.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Group** | 1 | 2 | 13 | 14 | 15 | 16 | 17 | 18 |
| **# Bonds** | 1 | 2 | 3 | 4 | 3 | 2 | 1 | 0 |
| **Example**  **Element** | Na | Be | Al | C | P | O | Cl | Ne |

Activity: Building Atomic Models

Homework:

1. Read p 210 – 214

2. Do p 217 #1 – 8

**Bonding Atoms**

A molecule or compound is formed when \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. A chemical **bond** is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Each atom has a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that can be made. **Noble gas** atoms are the only elements that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ want to form bonds.

A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is formed between two non-metal atoms \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. A **covalent bond** between two or more atoms **forms** a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or molecular compound. Some common molecules are water \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, glucose \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and   
nitrogen gas \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Later we will study how **atoms gain or lose electrons to form ions**. **Ions** are atoms with an \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Oppositely charged ions are attracted to each other and form ionic bonds. An ionic bond is formed by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. An **ionic bond** between two ions forms a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or ionic compound . Some common compounds are salt \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, iron oxide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or copper oxide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_or combining capacity is the ability of an atom of an element to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The periodic table can be used to determine the bond capacity of an element.

**Memorize** this chart!

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Group** | 1 | 2 | 13 | 14 | 15 | 16 | 17 | 18 |
| **# Bonds** |  |  |  |  |  |  |  |  |
| **Example**  **Element** |  |  |  |  |  |  |  |  |

Activity: Building Atomic Models

1. Read p 210 – 214

2. Do p 217 #1 – 8